

CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-11-28
13 – 23 September, 2011
Total Number of Sea Days - 11

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

100 camera-trap deployments
7 hook and line deployments
16 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 16 September 2011 with scientists from the Southeast Fishery-Independent Survey (SEFIS) to sample in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 27.26 N and 31.69 N. A total of 100 stations were sampled with camera-trap gear over 11 sea days between 18 and 57 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, most of which had one or more mounted high-definition video cameras, were utilized for hardbottom reef fish community assessments and collection of reef fish for biological samples (i.e., otoliths and gonads).
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen, and turbidity) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two high definition video cameras mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. A Canon camera (model HF S200) was attached above the mouth of the trap, and a GoPro camera (model HD Hero) was attached above the nose of the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

Hook and Line Sampling

Hook and line fishing was conducted to gather stomach samples for analysis and to supplement age/growth samples. A variety of reel, line, and hook sizes were used, typically with 3 hooks baited with a mixture of cut squid and cigar minnow. Targeted species for stomach content analysis were vermilion snapper, gray triggerfish, and red porgy. Fish collected with hook and line gear were counted, weighed, measured, and processed for biological samples (gonads, otoliths, and stomachs). Unlike all other cruises in 2011 where each fishing event was given a collection number, each successful angler was given a separate collection number during a fishing event.

Environmental Data Collection

Environmental data were collected with a Seabird “Conductivity, Temperature and Depth” instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (°C), salinity (parts per thousand), dissolved oxygen (mg/L), and turbidity (% transmission). CTD data were archived for further processing at the Beaufort laboratory. SCS software (version 4.2.3) was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Camera-Trap Sampling

100 stations were sampled with camera-trap gear (Table 1, Figure 2). From these traps, 27 taxa were collected and worked up for length frequency data.

Hook and Line Sampling

7 additional stations were sampled with hook and line gear. From these collections, two taxa were worked up for length frequency data and further processed for otoliths, gonads, and stomach tissues.

Environmental Data Collection

16 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data will be processed back at the lab using Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS–Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth, date and time for each fishing event (camera-trap Gear=324, hook and line Gear = 014) and CTD cast (Gear=298) conducted on the SH-11-28 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
113526	324	09/13/2011	19:36:25	31.60	-80.79	18
113527	324	09/13/2011	19:41:36	31.60	-80.78	18
113528	324	09/13/2011	19:51:31	31.59	-80.77	19
113531	324	09/14/2011	13:21:23	31.59	-80.79	20
113532	324	09/14/2011	13:28:17	31.60	-80.80	19
113533	324	09/14/2011	13:34:16	31.60	-80.80	20
113534	324	09/14/2011	13:41:08	31.59	-80.81	20
113535	324	09/14/2011	13:46:17	31.59	-80.81	20
113536	324	09/14/2011	13:52:34	31.58	-80.81	20
113538	324	09/14/2011	18:34:00	31.59	-80.76	20
113539	324	09/14/2011	18:41:51	31.59	-80.76	20
113540	324	09/14/2011	18:45:58	31.59	-80.76	18
113541	324	09/14/2011	18:51:33	31.58	-80.76	20
113542	324	09/14/2011	18:58:33	31.58	-80.76	20
113543	324	09/14/2011	19:07:31	31.57	-80.76	19
113545	324	09/15/2011	11:58:00	31.59	-80.40	30
113546	324	09/15/2011	12:04:22	31.58	-80.40	31
113547	324	09/15/2011	12:11:36	31.58	-80.40	30
113548	324	09/15/2011	12:18:22	31.58	-80.39	31
113549	324	09/15/2011	12:22:47	31.59	-80.38	31
113550	324	09/15/2011	12:32:34	31.58	-80.38	31
113552	014	09/15/2011	10:54:12	31.58	-80.40	30
113553	014	09/15/2011	10:55:06	31.58	-80.39	30
113554	014	09/15/2011	10:55:42	31.58	-80.39	29
113555	014	09/15/2011	10:56:10	31.58	-80.39	30
113556	014	09/15/2011	10:56:37	31.58	-80.39	30
113557	014	09/15/2011	10:57:03	31.58	-80.39	30
113558	324	09/15/2011	16:20:51	31.58	-80.36	32
113559	324	09/15/2011	16:26:50	31.58	-80.37	30
113560	324	09/15/2011	16:31:39	31.58	-80.37	33
113561	324	09/15/2011	16:36:21	31.58	-80.36	34
113562	324	09/15/2011	16:44:38	31.57	-80.36	32
113563	324	09/15/2011	16:53:57	31.57	-80.36	32
113564	298	09/15/2011	17:09:30	31.58	-80.36	31
113565	298	09/15/2011	13:08:16	31.59	-80.39	33
113566	324	09/15/2011	20:41:54	31.41	-80.59	27
113567	324	09/15/2011	20:46:46	31.41	-80.60	26

113568	324	09/15/2011	20:53:18	31.40	-80.59	26
113569	324	09/15/2011	20:58:31	31.40	-80.59	26
113570	298	09/15/2011	21:17:31	31.41	-80.59	26
113571	324	09/17/2011	12:04:52	29.18	-80.58	24
113572	324	09/17/2011	12:11:46	29.17	-80.58	28
113573	324	09/17/2011	12:18:50	29.17	-80.57	26
113574	324	09/17/2011	12:26:51	29.17	-80.56	28
113575	324	09/17/2011	12:33:23	29.16	-80.54	27
113576	324	09/17/2011	12:37:17	29.16	-80.54	26
113577	298	09/17/2011	12:43:41	29.16	-80.53	29
113578	324	09/17/2011	17:50:47	29.00	-80.27	43
113579	324	09/17/2011	17:56:28	29.00	-80.26	44
113580	324	09/17/2011	18:07:19	29.00	-80.27	44
113581	324	09/17/2011	18:15:32	29.00	-80.27	43
113582	324	09/17/2011	18:23:55	28.99	-80.27	44
113583	324	09/17/2011	18:28:05	28.99	-80.27	43
113584	298	09/17/2011	18:46:39	29.01	-80.26	45
113585	324	09/18/2011	11:56:32	27.26	-80.02	44
113586	324	09/18/2011	12:02:56	27.26	-80.02	43
113587	324	09/18/2011	12:09:33	27.27	-80.02	44
113588	324	09/18/2011	12:20:54	27.27	-80.02	46
113589	324	09/18/2011	12:29:11	27.27	-80.02	47
113590	324	09/18/2011	12:37:49	27.28	-80.02	49
113591	298	09/18/2011	12:47:59	27.28	-80.01	50
113592	324	09/18/2011	15:45:04	27.27	-80.02	45
113593	324	09/18/2011	15:51:07	27.27	-80.02	45
113594	324	09/18/2011	15:54:13	27.27	-80.02	43
113595	324	09/18/2011	16:05:29	27.27	-80.02	44
113596	324	09/18/2011	16:09:55	27.27	-80.02	43
113597	324	09/18/2011	16:18:03	27.28	-80.02	46
113598	298	09/18/2011	16:31:23	27.29	-80.02	48
113599	014	09/18/2011	03:00:00	27.86	-80.15	28
113600	324	09/19/2011	12:00:19	27.78	-80.02	52
113601	324	09/19/2011	12:04:31	27.79	-80.02	54
113602	324	09/19/2011	12:10:15	27.79	-80.01	55
113603	324	09/19/2011	12:15:41	27.78	-80.01	57
113604	324	09/19/2011	12:23:12	27.79	-80.01	54
113605	324	09/19/2011	12:29:08	27.79	-80.01	57
113606	298	09/19/2011	12:33:36	27.80	-80.01	60
113607	324	09/19/2011	15:07:22	27.76	-80.02	52
113608	324	09/19/2011	15:13:01	27.76	-80.01	57
113609	324	09/19/2011	15:20:00	27.75	-80.01	53
113610	324	09/19/2011	15:25:24	27.75	-80.02	51

113611	324	09/19/2011	15:31:57	27.75	-80.02	52
113612	324	09/19/2011	15:38:08	27.75	-80.02	52
113613	298	09/19/2011	15:44:18	27.74	-80.02	53
113614	324	09/20/2011	12:15:40	29.88	-80.29	53
113615	324	09/20/2011	12:25:51	29.89	-80.29	53
113616	324	09/20/2011	12:39:06	29.89	-80.29	53
113617	324	09/20/2011	12:51:11	29.90	-80.29	54
113618	324	09/20/2011	13:03:47	29.91	-80.29	54
113619	298	09/20/2011	13:24:38	29.88	-80.28	64
113620	324	09/20/2011	16:37:00	30.07	-80.28	54
113621	324	09/20/2011	16:46:27	30.07	-80.28	55
113622	324	09/20/2011	16:58:34	30.08	-80.28	55
113623	324	09/20/2011	17:12:09	30.08	-80.28	57
113624	324	09/20/2011	17:25:36	30.09	-80.27	54
113625	324	09/20/2011	17:38:42	30.09	-80.27	53
113626	298	09/20/2011	17:49:24	30.10	-80.26	69
113627	324	09/20/2011	20:27:37	29.95	-80.28	55
113628	324	09/20/2011	20:39:09	29.95	-80.28	56
113629	324	09/20/2011	20:49:09	29.96	-80.28	57
113630	324	09/20/2011	20:55:32	29.97	-80.28	57
113631	298	09/20/2011	21:01:44	29.97	-80.29	56
113632	324	09/21/2011	14:31:25	31.63	-80.58	24
113633	324	09/21/2011	14:35:55	31.62	-80.58	24
113634	324	09/21/2011	14:38:28	31.62	-80.57	24
113635	324	09/21/2011	14:46:22	31.62	-80.56	25
113636	298	09/21/2011	14:51:04	31.62	-80.56	24
113637	324	09/21/2011	18:18:37	31.69	-80.33	30
113638	324	09/21/2011	18:23:12	31.69	-80.33	30
113639	324	09/21/2011	18:27:32	31.69	-80.32	31
113640	324	09/21/2011	18:32:25	31.68	-80.33	30
113641	324	09/21/2011	18:39:39	31.68	-80.33	30
113642	324	09/21/2011	18:43:49	31.68	-80.34	30
113643	298	09/21/2011	18:52:26	31.69	-80.34	30
113644	324	09/21/2011	20:45:46	31.68	-80.35	30
113645	324	09/22/2011	12:02:38	31.26	-80.52	33
113646	324	09/22/2011	12:10:21	31.27	-80.51	33
113647	324	09/22/2011	12:38:28	31.27	-80.43	36
113648	298	09/22/2011	14:28:48	31.27	-80.43	36
113649	324	09/22/2011	18:01:12	31.24	-79.89	51
113650	324	09/22/2011	18:09:08	31.23	-79.89	50
113651	324	09/22/2011	18:18:08	31.22	-79.89	50
113652	324	09/22/2011	18:25:31	31.22	-79.89	50
113653	298	09/22/2011	18:35:33	31.22	-79.88	60



Figure 1. Chevron trap with video cameras attached over the nose and mouth positions.

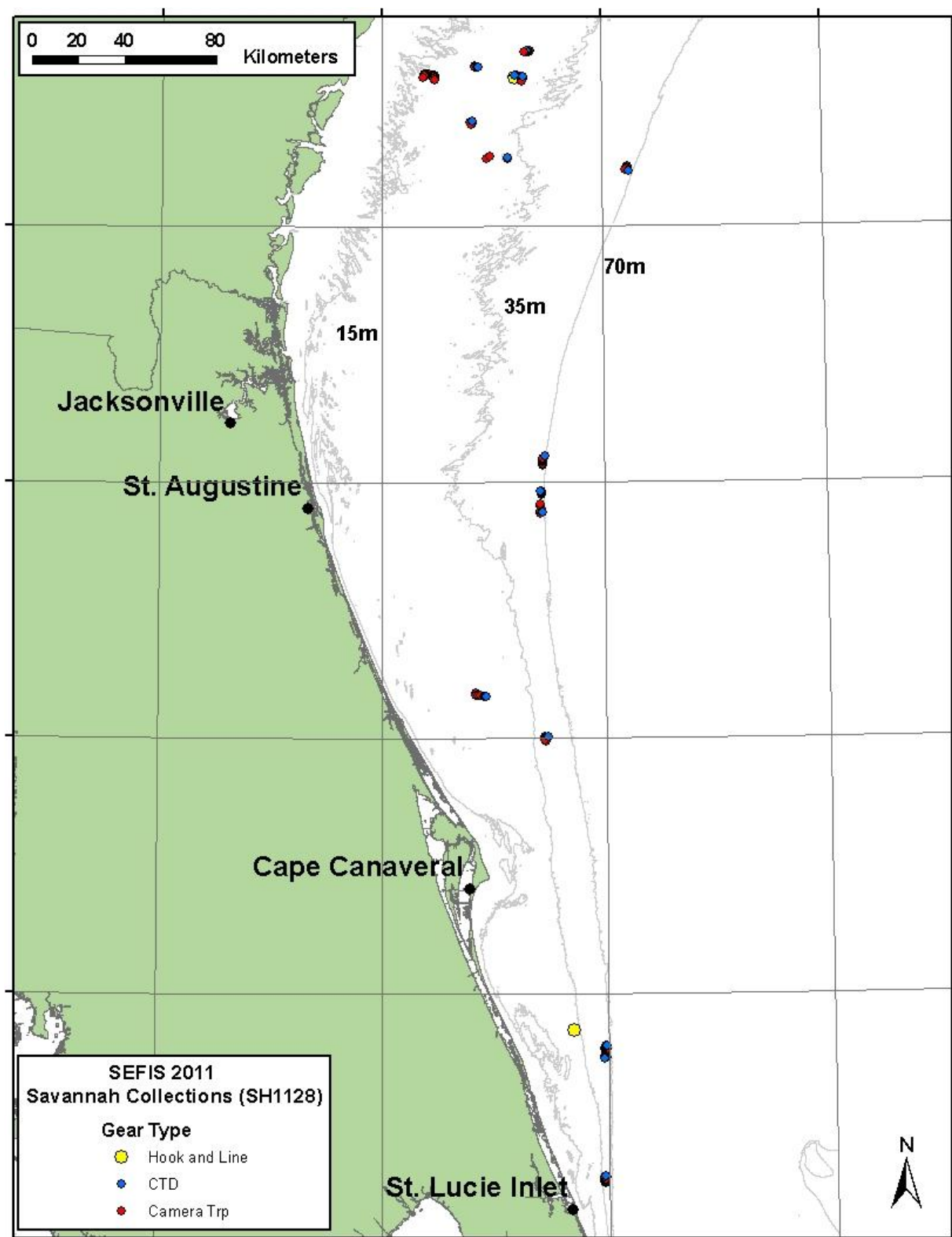


Figure 2. Locations of stations sampled with camera-trap, hook and line, and CTD gear on the SH-11-28 survey. Note that symbols overlap in many cases.

Cruise Report Prepared by: Zeb Schobernd, Nate Bacheler, and Christina Schobernd.

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